

IN THE CLAIMS:

Amendments to the Claims

Please amend claims 1, 4 and 30-32 as shown below, please cancel claim 33 without prejudice or disclaimer of the subject matter thereof, and add the following new claims as shown below:

Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A method of treating a surface of a sample, comprising the steps of:
 - generating a plasma in a treatment chamber;
 - applying an rf bias voltage of a frequency of at least 100 kHz so that ions of intermediate energy which promote etching reaction while providing poor directionality are reduced, and ions of high energy having a high directionality and ions of low energy which do not contribute to etching are increased, so as to have at least one peak point at a region of high ion energy and at least one peak point at a region of low ion energy for anisotropic etching, and the rf bias voltage to which a peak to peak voltage V_{pp} value larger than a V_{pp} value of a continuous rf bias voltage at which the same etch rate can be obtained is given, so as to have the high ion energy which is larger than a high ion energy of the continuous rf bias voltage, is applied to a stage on which a sample is placed independently of the generation of the plasma; and
 - on-off modulating the rf bias voltage ~~at least at~~ by effecting modulation of the rf bias voltage for one period of anisotropic etching treatment of the sample and which is prior to another period of etching treatment of the surface of the sample in

which selectivity is higher than selectivity at the one period and in which modulation of the rf bias voltage is not effected.

Claims 2 and 3 (canceled)

4. (currently amended) A method of treating a surface of a sample, comprising the steps of:

generating a plasma in a treatment chamber;

applying an rf bias voltage of a frequency so that ions of intermediate energy which promote etching reaction while providing poor directionality are reduced, and ions of high energy having a high directionality and ions of low energy which do not contribute to etching are increased, so as to have at least one peak point at a region of high ion energy and at least one peak point at a region of low ion energy for anisotropic etching, and the rf bias voltage to which a peak to peak voltage V_{pp} value larger than a V_{pp} value of a continuous rf bias voltage at which the same etch rate can be obtained is given, so as to have the high ion energy which is larger than a high ion energy of the continuous rf bias voltage, is applied to a stage on which a sample is placed independently of the generation of the plasma; and

on-off modulating the rf bias voltage ~~at least at~~ by effecting modulation of the rf bias voltage for one period of anisotropic etching treatment of a surface of the sample and which is prior to another period of etching treatment of the surface of the sample in which selectivity is higher than selectivity at the one period and in which modulation of the rf bias voltage is not effected;

wherein a duty ratio ~~when of the on-off modulation of the rf bias voltage is in the on-state~~ is set to 5 to 50%.

Claims 5-29 (canceled)

30. (currently amended) A method of treating a surface of a sample, comprising the steps of:

generating a plasma in a treatment chamber;

applying an rf bias voltage of a frequency so that ions of intermediate energy which promote etching reaction while providing poor directionality are reduced, and ions of high energy having a high directionality and ions of low energy which do not contribute to etching are increased, so as to have at least one peak point at a region of high ion energy and at least one peak point at a region of low ion energy for anisotropic etching, and the rf bias voltage to which a peak to peak voltage V_{pp} value larger than a V_{pp} value of a continuous rf bias voltage at which the same etch rate can be obtained is given, so as to have the high ion energy which is larger than a high ion energy of the continuous rf bias voltage, is applied to a stage on which a sample is placed independently of the generation of the plasma; and

on-off modulating the rf bias voltage ~~at least at~~ by effecting modulation of the rf bias voltage for one period of an anisotropic main etch of the first layer of the sample ~~and which is~~ prior to another period during which the second layer which underlies the first layer is exposed and in which selectivity is higher than selectivity at the one period and in which modulation of the rf bias voltage is not effected;

wherein the at least one peak point of the region of the high ion energy and the at least one peak point of the region of the low ion energy has a number of ions which is at least twice a number of ions in a region of the intermediate ion energy.

31. (currently amended) A method according to claim 1, wherein the sample includes a first layer formed over a second layer which underlies the first layer, and the on-off modulating of the rf bias voltage ~~at the at least for the~~ one period of anisotropic etching treatment of the surface of the sample includes an anisotropic main etch of the first layer of the sample which is prior to the another

period of etching treatment of the surface of the sample during which the second layer ~~is underlying~~ the first layer exposed.

32. (currently amended) A method according to claim 31, wherein the anisotropic main etch of the first layer is effected during the ~~at least one~~ period without exposing the second layer which underlies the first layer.

Claim 33 (canceled)

34. (new) A method according to claim 1, wherein the modulation of the rf bias voltage in the on-off modulating is effected at a frequency of at least 100 Hz.

35. (new) A method according to claim 4, wherein the applying of the rf bias voltage is effected at frequency of at least 100 kHz and the modulation of the rf bias voltage in the on-off modulating is effected at a frequency of at least 100 Hz.

36. (new) A method according to claim 30, wherein the applying of the rf bias voltage is effected at frequency of at least 100 kHz and the modulation of the rf bias voltage in the on-off modulating is effected at a frequency of at least 100 Hz.